XSDZ-3DM

Speed Dome Keyboard & Joystick Controller

USER MANUAL

CAUTION

- **Please read this user manual carefully to ensure that you can use the Keyboard and Joystick correctly and safely.**
- **We cannot guarantee all the content is correct. The contents of this manual are subject to change without notice.**
- **This controller should be operated only from the recommended power source (Technical Data Page 9). The voltage of the power must be verified before use. Kindly remove the cables from the power source if the controller is not to be used for a long period of time.**
- **Do not install this controller near heat sources such as radiators, heat registers, stoves or other devices that produce heat.**
- **Do not install this controller near water. Clean only with a dry cloth.**
- **Do not block any ventilation openings and ensure the controller is well ventilated.**
- **This equipment is for indoor use only. Do not expose the device to rain or a moist environment. In case any solid or liquid gets inside the keypad, please cut off the power supply immediately, and get it checked by a qualified technician.**
- **Refer all servicing to qualified service personnel. You should repair no parts without technical aid or approval.**
- **This manual is suitable for the XSDZ-3DM Speed Dome Keyboard and Joystick controllers.**

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1. Introduction

The XSDZ-3DM controller is a universal keyboard and joystick designed to control speed dome cameras for security systems. The XSDZ-3DM can control both the camera's movement and the zoom magnification of its lens. A functional backlit LCD screen displays the parameters of the current operation; the protocol ID, the dome ID, the monitor ID and the operational state of the joystick. The joystick together with the LCD screen provides the user with a more efficient and easier control for their security systems.

1.1 Notice

Please read the manual carefully and follow all instructions.

1.2 Functions and Characteristics

- The keyboard can connect up to maximum of 31 domes in the direct control mode using an RS485 Bus Line
- Compatible with a wide range of speed dome operating protocols
- Also controls the camera's Iris Focus and Zoom.
- Set and run presets, scans, patterns and tours
- Control the matrix, which then controls the dome indirectly
- Equipped with a 3D Joystick
- A functional backlit LCD screen displays the parameters of the current operation; the protocol ID, the dome ID, the monitor ID and the operational state of the joystick

1.3 Technical Data

Operating Voltage:

- Input voltage: 12V DC
- Rating Power: 0.5W

Communication Characteristics:

- Communication interface: RS485 Bus Line with Infrared emission
- Communication frequency: 2400, 4800, 9600 and 19200bps
- Communication distance: RS485 can reach 1.2km (infrared emission reaches 10m)

Operational Environment:

- Operating temperature: 0° - 50°C
- Relative humidity less than 90%

Dimensions:

- 68 x 136 x 105mm (L x W x H)
- Weight: 0.845 kg

2. Keyboard Connection

2.1. RS485 Interfaces

RS485 can be connected by the 2-port terminal block at the front of the controller. An RS485 (A+, B-) interface allows the controller to connect with the speed dome directly, via a DVR or other keyboards (i.e. if the keyboard controls the dome via a matrix).

The Keyboard

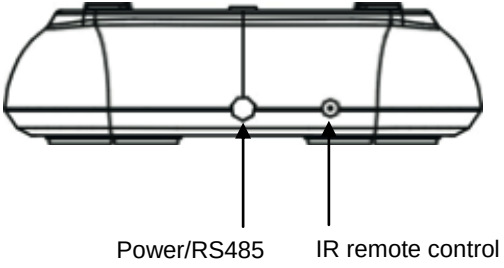


Figure 2.1

2.2 Direct Connection to Dome

The keyboard connects to the Dome via the RS485 interface, which is the communication port. This is illustrated in figure 2-3.1 below.

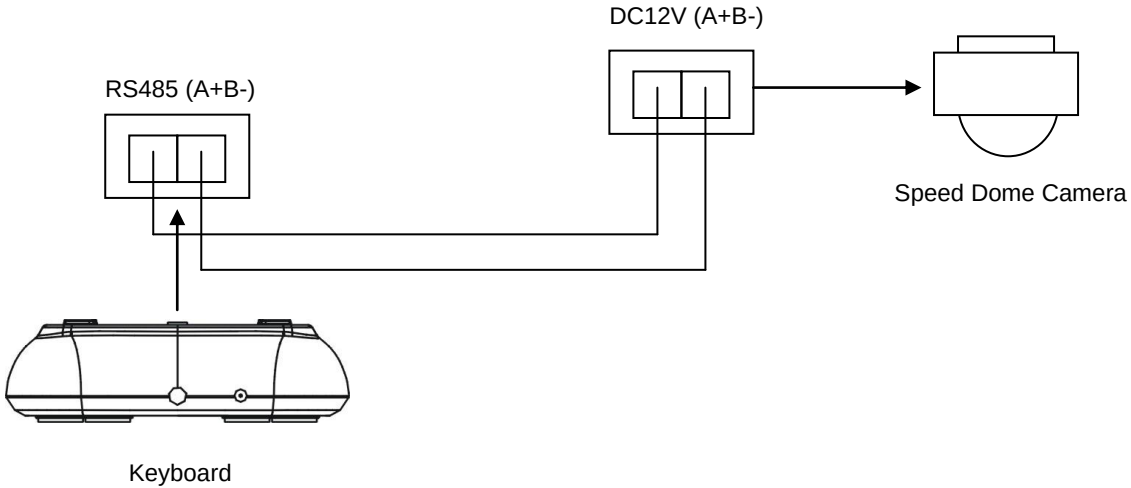
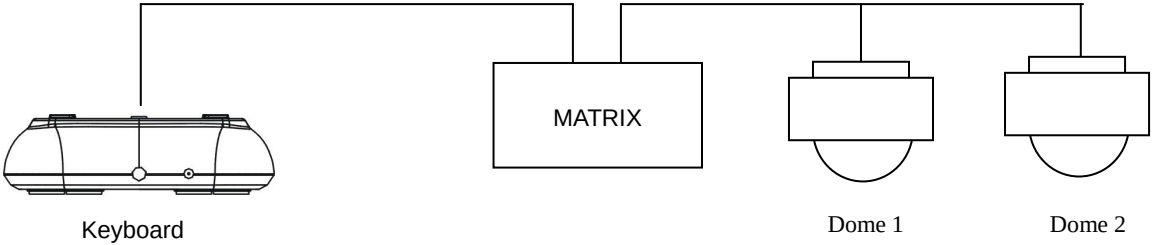


Figure 2-3.1

2.3 Keyboard Connection through Matrix

You can indirectly control the dome when it connects through a matrix as shown in the illustration below. Connect the keyboard and dome in a parallel way to the bus of the RS-485. The keyboard can control any dome in the series. Using this method, the ID of the main keyboard should be “1” and the baud rate should be 9600bps.

Figure 2-4.1



Please Note

- With a direct connection, the keyboard can control a maximum number of 31 cameras using the RS485 bus
- The maximum number of keyboards that can be used in a system is four (4)
- The controllers should all be given different IDs as shown in figure 2-4.2 below

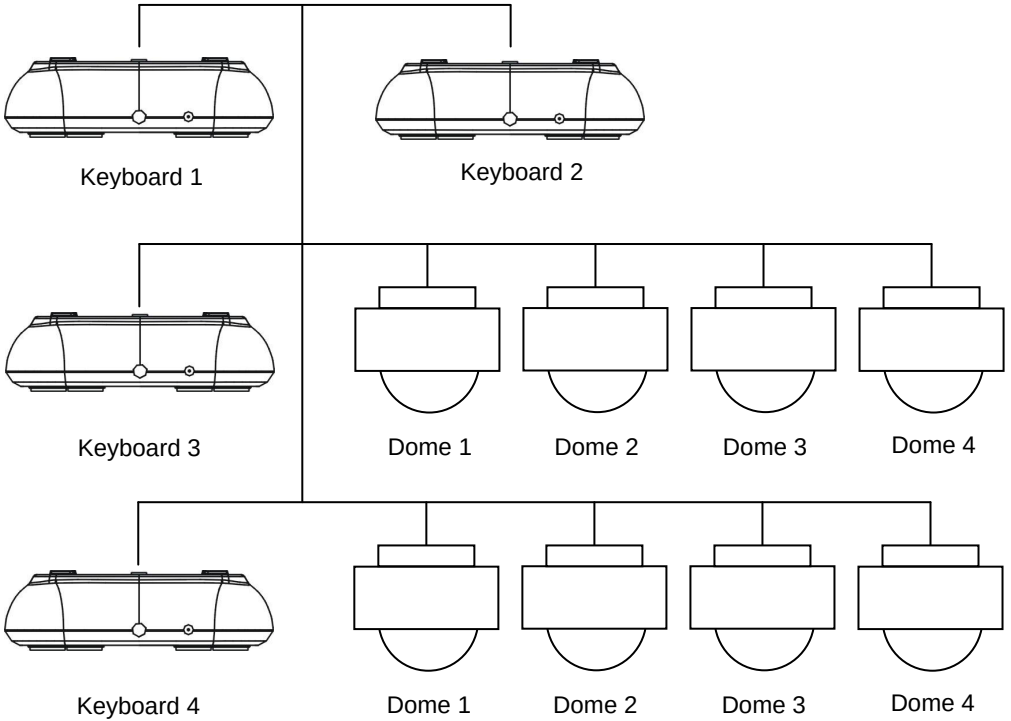

Keyboard 1
Keyboard 2
Keyboard 3
Dome 1
Dome 2
Dome 3
Dome 4
Keyboard 4
Dome 1
Dome 2
Dome 3
Dome 4

Figure 2-4.2

3. Keyboard Operation Instruction

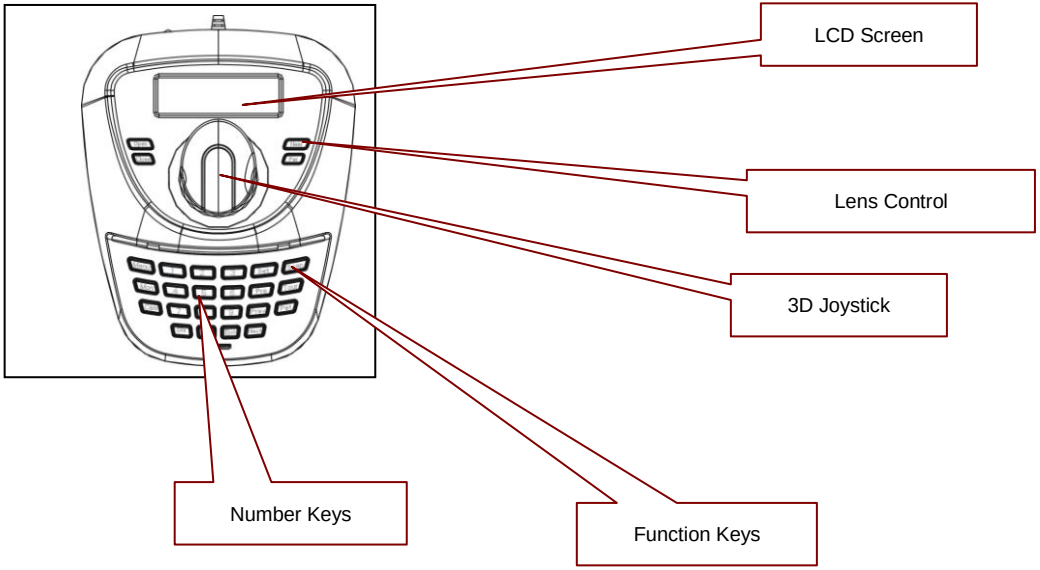


Figure 3-1.1

Please Note Other security systems may have different operational requirements and may not be compatible

3.1 Power Mode

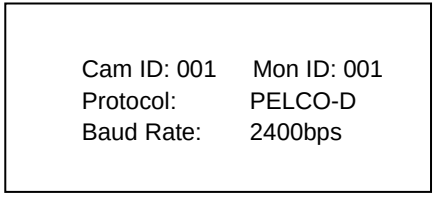
When the keyboard is turned on, it automatically checks the Baud Rate; the Protocol of the keyboard, the Dome and Monitor ID's and displays all the information on the LCD screen.

Please Note: The joystick should be not be touched whilst the keyboard is initialising.

3.2 LCD display screen

The LCD screen displays the following as shown in the illustration below. It also displays the parameters of the current operation and the operational state of the controller.

Please Note The LCD backlight switches turns off automatically after 10 seconds of inactivity.



3. 3 Functions of the Joystick

The Joystick controls the both the movement of the dome and navigating the operational setup menu.

- You can operate the joystick at will in any direction and the Speed Dome will move in that direction, detailed below:

- Navigating menu items:

The top arrow is also used for navigating **upper menu** items:

The down arrow is used for navigating **lower menu** items:

The right arrow is used for navigating **next menu** items:

The left arrow is used for navigating **previous menu** items:

Please Note There is a direct proportion between the speed of the movement of the dome and the pressure applied to the joystick.

3. 4 Observing the Cameras

- Selecting Cameras: **Number + Cam**
  - Input the camera ID and then press the **Cam** key to select a camera in the network

3.5 Dome lens control

- Zoom：to Zoom users can control the zoom by rotating the joystick (clockwise/anticlockwise)
- Focus：Used in bringing objects into clear visibility. The following buttons can be used:
  - Press **Far** key to focus far objects
  - Press **Near** key to focus nearer objects

Please Note Normally the dome will adjust the zoom and focus controls automatically. The **Far** and **Near** keys are used to manually zoom and focus the camera.

- Iris：Used to control the amount of light coming through the camera lens. Users can use the following buttons:
  - Press **Open** key for manual iris accretion. A full white picture means maximum iris is selected.
  - Press **Close** key for manual iris reduction. A full black picture means minimum iris is selected.

3.6 Set Dome Function

3.6.1 Preset

- Preset：**Set** + **N** + **Pre** (**N** represents the preset number):
  - Press **Set** key and then input a number for the defined scan and press the **Pre** key
- Call Preset：**N** + **Pre:**
  - Input the preset number and then press **Pre** key

3.6.2 Scan

- Left borderline：**Set** + **1** + **Scan**
- Right borderline： **Set** + **2** + **Scan**
- Start scan：**1** + **Scan**

Please Note Enter the menu to setup these options when you need to change the scan speed (refer to section 3.7)

3.6.3 Pattern

- Design path setup：**Set** + **N** + **Pat** + **Path** + **Set** + **0** + **Pat:**
  - Press **Set** key, input a number for the defined scan (i.e.1 - 4), press **Pat** key then move the camera along the desired path. When finished press the **Set** key first, press **0** key and then the **Pat** key.

Please Note Alternatively patterns can be set within the camera's own setup menu

- Starting the pre-defined scan : **N** + **Pat**
    - Input the pre-defined scan number (i.e.1 - 4) and press **Pat** key to start.

3.6.4 Cruise

- Cruising : **N** + **Tour**
    - Input the predefined cruise number first and then press **Tour** key (this will tour the predefined presets). Press the **Tour** key directly if the system only has one cruise.

3.7 Call Main Menu

- Calling the Main Menu: **9** + **5** + **Pre**
    - Input 95 and then press **Pre** key. A menu will be displayed on the monitor. The joystick can then be used for navigation (i.e. up/down to move through the options and left/right to select options).

3.8 Matrix Control

3.8.1 Switching the Dome Order

The matrix can connect only up to 16 high Speed Domes. Information such as the Series Number, Time and Date will display on the monitor when you switch from one camera to another.

- The **Prev** button switches to the previous camera. Pressing the **Pre** button for 2 seconds will keep the cameras switching through all the 16 high speed domes.
- Press **Next** to switch to the next camera. Pressing the **Next** button for 2 seconds will keep the cameras switching back and forth until it finally gets to the 16th camera.

3.8.2 Call matrix main menu

- **Shi** + **Set:** (Calls the main menu, the menu will display on the object monitor)
  - Press the Shift button and then the Set button
  - Refer to the matrix section of the manual to know how to use the keyboard in setting the matrix.

3.8.3 Confirm after program

- **Ent:**
  - Press the Enter (**Ent**) button to confirm once the matrix has been programmed successfully.
  - Refer to the matrix section of the manual for detailed programming.

3.8.4 Change object monitor

- **N** + **Mon:**
  - Input the monitor ID number and then press the **Mon button**. The image and the menu of the dome that you controlled with the keyboard will be displayed in the object monitor.

4. Keyboard Menu Control

- Press and hold the **Menu** button for 3 seconds to enter the main menu (Figure 4.1.1-1). The entire menu settings will be displayed. Now enter the corresponding number or use the Joystick to move up/down and select a particular camera.
- Once you find the specific camera, move the joystick to navigate the menu (right to enter/left to leave)

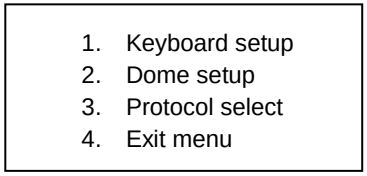


Figure 4-1.1-1

- To save the settings press the **Ent** button to save the settings and the text **<Success!>** will be displayed
- To return back to the previous menu press the **Prev** button

4.1 Keyboard Parameter Settings

4.1.1 Keyboard ID set up

- Enter the main menu as shown in figure 4-1.1
- Press the number **1** button to select the keyboard setting as shown in figure 4.1.1-2 detailed below.

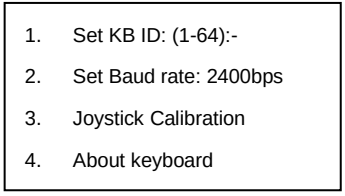


Figure 4.1.1-2

- Press the number **1** button to **select Set KB ID** as shown in figure 4.1.1-3 below:

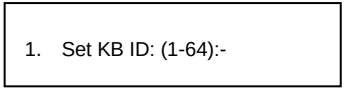


Figure 4.1.1-3

- Press the number **1** to set the keyboard ID as in Figure 4.1.1-4 below:

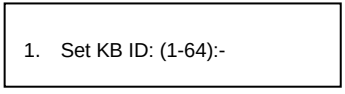


Figure 4.1.1-4

- Input the specified number to select the camera ID within the range (1-64) and then press the **Ent** to save. If successful the text **<Success!>** will be displayed at the bottom of the screen
- If the number you input is outside of the range1 - 64, it will display '**Error'** as shown in figure 4.1.1-6.

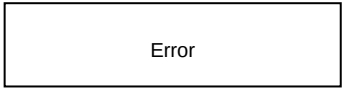


Figure 4.1.1-6

- Press the **Prev** button or use the LEFT, RIGHT arrows for the back and previous menu.

Please Note The default camera ID is 1. If there is only one keyboard in the system, then it must be set to 1. Several keyboards can work together (i.e. maximum of 4) with at least one keyboard ID set to 1.

4.1.2 Keyboard Baud Rate Settings

- Enter the main menu (as in Figure 4.1.1-1)
- Press the number **1** button to enter the keyboard settings
- Press the number **2** button to enter the Baud Rate settings (as in Figure 4.1.2-1)

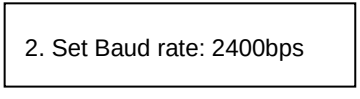


Figure 4.1.2-1

Please Note Under the IR communication mode the Baud rate must be set to either 2400bps or 4800bps

- Select the Baud rate you need and press the **Ent** button to save any changes. If successful the text **<Success!>** will be displayed
- Press the **Prev** button or move the joystick to LEFT to back to previous menu.

Please Note When using a multiple keyboards setup such as a matrix, the baud rate must be set to either 9600bps or 19200bps

4.1.3. Joystick Adjustment

To adjust the joystick settings the user needs to enter the menu for the 'Joystick Calibration' menu. Please ensure the joystick is in a neutral state. The steps are as follows:

- Enter the main menu (as in Figure 4.1.1-1)
- Press the number **1** button to enter the Keyboard Setup
- Press the number **3** button to enter the Joystick Calibration settings (as in Figure 4.1.3-1)

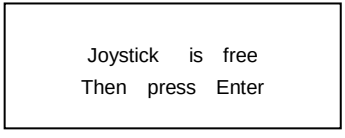


Figure 4.1.3-1

- Press **Ent** to finish the joystick calibration. If successful the text **<Success!>** will be displayed

4.1.4 Display Keyboard Information

- Enter the main menu (as in Figure 4.1.1-1)
- Press the number **1** button to enter the Keyboard Setup
- Press the number **4** button to check the keyboard information

4.2 Dome set up

4.2.1 Preset set up

- Enter the main menu (as in Figure 4.1.1-1)
- Press the number **2** button to enter the Dome settings menu (figure 4.2.1-1). From here you can set the following functions: Preset, Scan, Pattern and Tour. These functions can also be set up in the camera's menu.

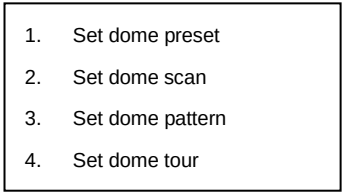


Figure 4.2.1-1

- Press the number **1** button to enter the dome Preset function settings (as in figure 4.2.1-2 below):

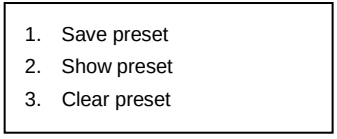


Figure 4.2.1-2

- Press the number **1** button to enter the preset menu, you can input the preset number as in figure (4.2.1-3)

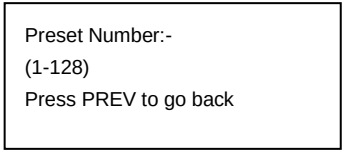


Figure 4.2.1-3

- After entering the preset menu you can use the navigation keys to control the dome directly. Input the preset number to save. If successful the text **<Success!>** will be displayed.
- Press the **Prev** button to go back to the previous menu.

Please Note Under this mode, operating the keys and moving the joysticks will not control the domes.

- Press the number **2** button to view the presets (figure 4.2.1-5)

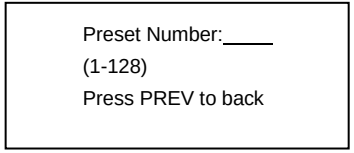


Figure 4.2.1-5

- Input the Preset Number that you would like to view and press the **Ent** button. If successful the text **<Success!>** will be displayed and then press the **Prev** to revert back to the previous menu.

- Press the number **3** enter the '**Clear Preset'** option (as figure 4.2.1-6 below)

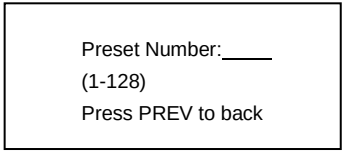


Figure 4.2.1-6

- Input the preset number that you would like to clear, and press the **Ent** button. If successful the text **<Success!>** will be displayed and then revert back to the previous menu.

4.2.2 Dome Scan set up

- Enter the main menu (as in Figure 4.1.1-1)
- Press the number **2** button to enter the Dome Setting menu
- Press the number **2** button to enter the Dome Scan Setting menu, as detailed below:

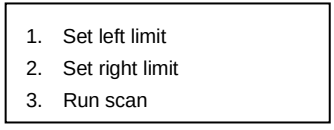


Figure 4.2.1-1

- Press the number **1** button to set the Left limit as picture 4.2.2-2 shows.

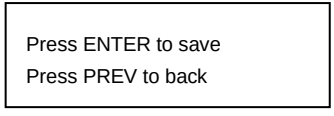


Figure 4.2.2-2

- Move the dome to a suitable position, and press **Ent** to save. If successful the text **<Success!>** will be displayed and then revert back to the previous menu.
- Press the number **2** button to set the Right limit and follow the same procedure as detailed above.
- Go back to the menu and press the number **3** button to run a scan (as you have setup in the above steps)

Please Note Under this mode, operating the keys and moving the joysticks will not control the domes.

4.2.3 Pattern Setup

- Enter the main menu (as in Figure 4.1.1-1)
- Press the number **2** button to enter the Dome Setting menu
- Press the number **3** button to enter the pattern setting as shown in figure 4.2.3-1.

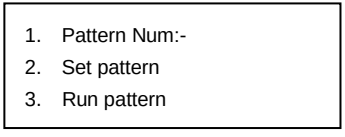


Figure 4.2.3-1

- After entering the menu, input the pattern number you want to create. You can put in the Numbers 1-4 and press **Ent**. The selection will skip to the next item automatically to set the pattern you need. If you already have it, you can skip it and press the number **3** to run the pattern directly.

Pattern setting:

- Press number **2** to enter the 'Set Pattern' page.
- Move the dome to a start position and press the **1** button to start recording the pattern (Fig 4.2.3-2)
- The LED screen will display **Start ……** (at the bottom of the page)
- Press **0** to finish the record the pattern
- If successful the text **<Success!>** will be displayed and then revert back to the previous menu. Select option 3 to run the pattern.

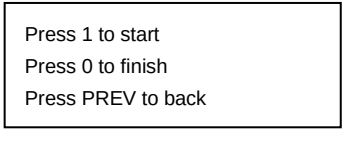


Figure 4.2.3-2

Please Note Under this mode, operating the keys and moving the joysticks will not control the domes.

4.2.4 Tour Setup

- Enter the main menu (as in Figure 4.1.1-1)
- Press the number **2** button to enter the Dome Setting menu (figure 4.2.1-1)
- Press the number **4** button to enter the tour setting menu (figure 4.2.4-1)

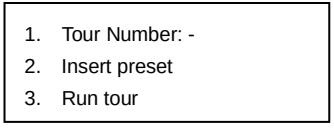


Figure 4.2.4-1

- After entering the menu, you need to input the TOUR information. Input the number (i.e. between 1- 6), and press the **Ent** button to confirm. The selection will then auto skip to the second TOUR setting. The text **<Success!>** will be displayed and then revert back to the previous menu upon completion.
- Select Item 2 as shown in figure 4.2.4-2. You will need to input the tour preset, and in the second item you need to input the speed information (range is between 1-27). In the third option you will need to input the time it needs to stop. The range is from 1-255. After finishing all the steps, press the **Ent** key. This will display **<Success!>** on the screen and then revert back to the previous menu.

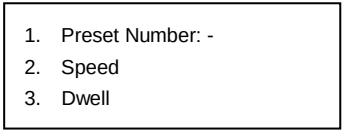


Figure 4.2.4-2

- Press **3** to run the Tour

4.3 Protocol set up

- Enter the main menu (Figure 4.1.1-1). Press the number **3** button to enter the Protocol Setting menu (figure 4.3-1)

Figure 4.3-1

4.3.1 Pelco Matrix model

- Press the number **1** button to enter the PELCO Matrix menu as shown in the picture 4.3.1-1.
- Press the **Ent** key to select the protocol options and then revert back to the previous menu.

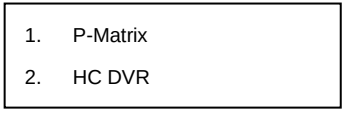


Figure 4.3.1-1

4.3.2 Dome control model

- From the Protocol Setting Menu (figure 4.3-1), press the number **2** to enter the dome control menu (figure 4.3.2-1)
- Select the appropriate Protocol by choosing options **2** or **3** (PELCO-P or D) and then go back to the previous menu.

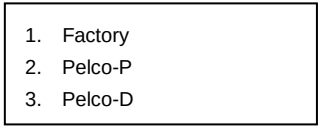


Figure 4.3.2-1

4.3.3 Exit Keyboard Menu

- From the main menu (figure 4.1.1-1) and press the number **4** button to exit the menu.

5. Appendix

5.1 RS485 Bus General Knowledge

According to the RS485 Industrial Standards, the RS485 Bus is of half-duplex data transmission cables with a characteristic impedance of 120. The maximum load capacity is 32 unit loads (including the main controller and the controller equipment).

Distance of RS485 bus transmission

Use the 0.56mm (24 AWG) twisted cable as the communication line; the farthest distance it can reach is as follows based on the different Baud rates:

Baud Rate	Maximum Distance
2400bps	1800m
4800bps	1200m
9600bps	800m
19200bps	600m

To ensure maximum transmitting distance the RS485:

- Uses high quality cables
- Installs the dome in an environment with a minimum amount of electromagnetic interference
- Minimizes the amount of equipment/workload on the RS485 Bus

Connection and termination resistance

The RS485 standards require a daisy-chain connection between the equipment. There must be termination resistance of 120 Impedance at both ends of the connection. Please refer to figures 4-1.1 and 4-1.2:

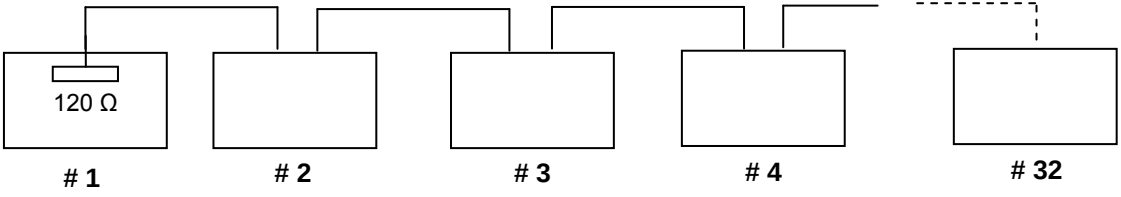


Figure 4-1

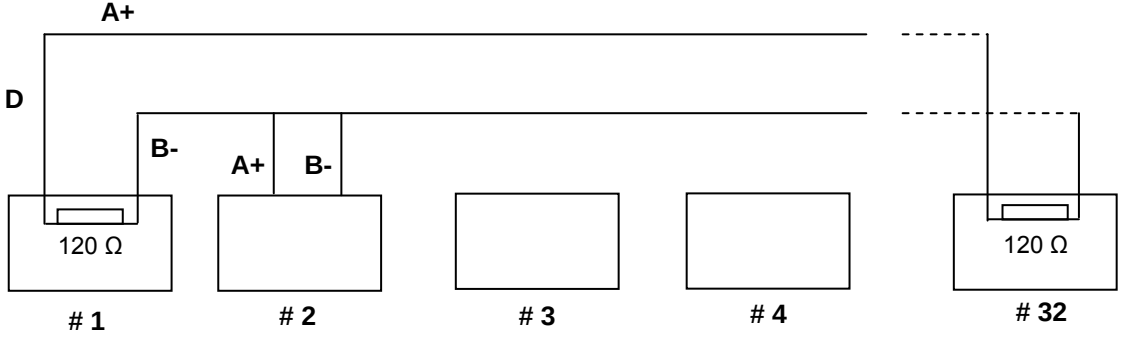


Figure 4-1.2

Please Note Connection D should not exceed 7m

Problems during practical use

In some circumstances the user adopts a star configuration in practical connection. The termination resistors must be connected to both equipment and should be farther away from each other, such as equipment1# and 15# (refer to figure 4-1.3).
As the star configuration does not conform with the requirements of the RS485 standards, problems such as signal reflections and lower anti-interference performance arise when the cables used in the connection are too long. The reliability of control signals are decreased with the phenomena that the dome does not respond to or just responds at intervals to the controller, or follows a continuous operation without stopping.
Under such circumstances the factory will recommend the use of the RS485 distributor. The distributor can change the star configuration connection to the mode of connection stipulated in the RS485 standards. The new connection then achieves a reliable data transmission. Please refer to figure 4-1.3.

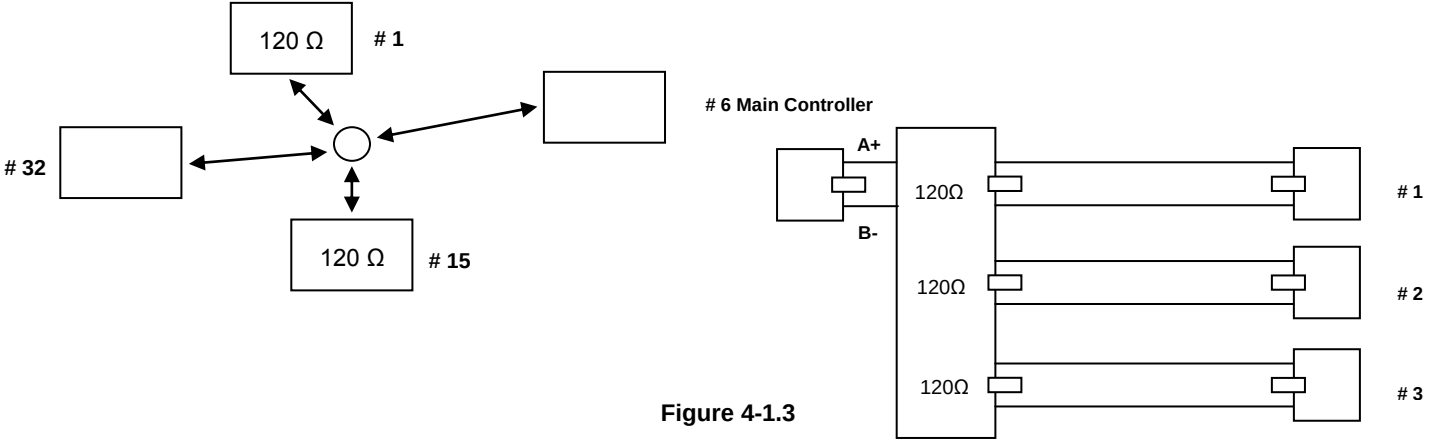


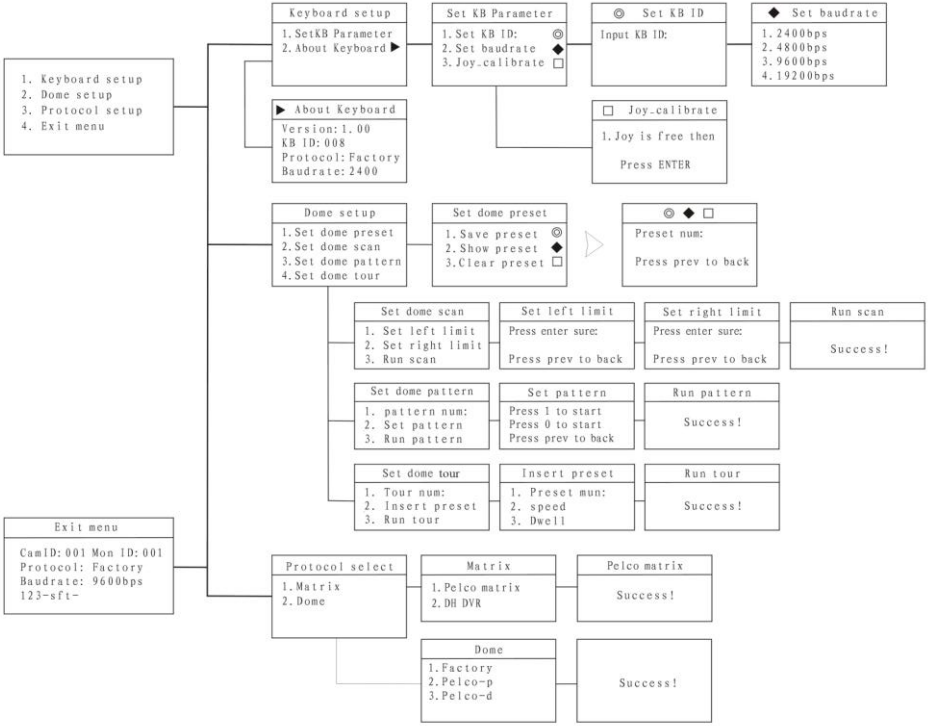
Figure 4-1.3

5.2 Keyboard Shortcut Instructions

Working Mode	Shortcut	Operation Object	Function
Direct Control Mode	Press **Set** for 3 seconds	Keyboard	IR remote ON/OFF
	Press **Menu** for 3 seconds	Keyboard	Enter the system setting
	N + **Cam**	High Speed Dome	Input Dome ID and press **Cam** to select object dome.
	Rotate the joystick anti-clockwise	High Speed Dome	Zoom-In
	Rotate the joystick clockwise	High Speed Dome	Zoom -Out
	Far	High Speed Dome	Press **Far**, far focus
	Near	High Speed Dome	Press **Near**, near focus
	Close	High Speed Dome	Press **Close**, reduce Iris
	Open	High Speed Dome	Press **Open**, increase Iris
	Set + **N** + **Preset**	High Speed Dome	Adjust the image to object position, Press **Set** to input the preset, and press **Preset** to set the preset
	N + **Preset**	High Speed Dome	Input preset ID, press **Preset** to call the preset
	Shi + **1** + **Ent**	High Speed Dome	ON/OFF water Wiper

	Shi + **2** + **Ent**	High Speed Dome	ON/OFF auxiliary light.
	Set + **1** + **Scan**	High Speed Dome	Adjust the image to object position, press Set to input **1**, then press Scan to set **Scan** left limit.
	Set + **2** + **Scan**	High Speed Dome	Adjust the image to object position, press Set to input **2** then press **Scan** to set scan right limit.
	1 + **Scan**	High Speed Dome	Input **1**, press **Scan** to run scan.
	Set + **N** + **Pattern**	High Speed Dome	Press **Set** then input pattern number, press **Pattern** to record pattern path.
	Set + **0** + **Pattern**	High Speed Dome	Press **Set** then input 0, Press **Pattern** to save pattern.
	N + **Pattern**	High Speed Dome	Input the pattern path (1-4), Press **Pattern** to start pattern.
	N + **Tour** / **Tour**	High Speed Dome	Input the **Tour** number, press **Tour** or directly press **Tour** to start the Tour.
	9 + **5** + **Preset**	High Speed Dome	Input 95 and press **Preset** to call the menu.
PELCO Matrix Mode	**Shift** + **Set**	Matrix	Press **Shift** and **Set** to call the matrix menu.
	Prev	Matrix	Press **Prev** skip to the previous dome, hold on 2 secs on **Prev** to continuously skip the sixteen

			domes of connection matrix forwards.
	Next	Matrix	Press **Next** skip to the previous dome, hold on 2 secs on **Next** to continuously skip the sixteen domes of connection matrix backwards.
	Stop	Matrix	Stop switch
	Ent	Matrix	After program, press **Ent** to confirm.
	N + **Mon**	Matrix	Input monitor ID, press **Cam** to select object monitor.


1. Keyboard setup
2. Dome setup
3. Protocol setup
4. Exit menu
Keyboard setup
1. SetKB Parameter
2. About Keyboard
Set KB Parameter
1. Set KB ID:
2. Set baudrate
3. Joy_calibrate
Set KB ID
Input KB ID:
Set baudrate
1. 2400bps
2. 4800bps
3. 9600bps
4. 19200bps
About Keyboard
Version: 1.00
KB ID: 008
Protocol: Factory
Baudrate: 2400
Joy_calibrate
1. Joy is free then
Press ENTER
Dome setup
1. Set dome preset
2. Set dome scan
3. Set dome pattern
4. Set dome tour
Set dome preset
1. Save preset
2. Show preset
3. Clear preset
Preset num:
Press prev to back
Set dome scan
1. Set left limit
2. Set right limit
3. Run scan
Set left limit
Press enter sure:
Press prev to back
Set right limit
Press enter sure:
Press prev to back
Run scan
Success!
Set dome pattern
1. pattern num:
2. Set pattern
3. Run pattern
Set pattern
Press 1 to start
Press 0 to start
Press prev to back
Run pattern
Success!
Set dome tour
1. Tour num:
2. Insert preset
3. Run tour
Insert preset
1. Preset mun:
2. speed
3. Dwell
Run tour
Success!
Exit menu
CamID: 001 Mon ID: 001
Protocol: Factory
Baudrate: 9600bps
123-sft-
Protocol select
1. Matrix
2. Dome
Matrix
1. Pelco matrix
2. DH DVR
Pelco matrix
Success!
Dome
1. Factory
2. Pelco-p
3. Pelco-d
Success!